

CLAIMS

1. A targeting apparatus for use in performing endofemoral osteotomy surgery comprising a support element provided with a drill guide, means for securing the support element to the proximal end of a prosthesis to be implanted and which include a proximal location element which is shaped to extend around the great trochanter and muscles of the femur in which the implant is to be located, and means for adjusting the angular position of the drill guide in relation to the femur about a proximal-distal axis.

2. The targeting apparatus as claimed in claim 1 wherein the proximal location element is in the form of a curved arm connected to the support element.

3. The targeting apparatus as claimed in claim 2 wherein the curved arm is substantially S-shaped.

4. The targeting apparatus as claimed in claim 1 wherein the proximal location element is detachable from the support element.

5. The targeting apparatus as claimed in claim 4 wherein the proximal location element is attached to the support element by a plug and socket connection.

6. The targeting apparatus as claimed in claim 5 wherein the plug is of triangular cross-section.

7. The targeting apparatus as claimed in claim 4 wherein the apparatus includes two detachable alternative proximal location elements, one for use with a right femur and the other for use with a left femur.

8. The targeting apparatus as claimed in claim 1 further comprising means for adjusting the support element to accommodate alternative leg lengths.

9. The targeting apparatus as claimed in claim 8 in which the drill guide is located at a predetermined proximal-distal position from the means for connection to the proximal end of the femoral prosthesis.

10. The targeting apparatus as claimed in claim 8 further comprising means for locating the drill guide in alternative proximal-distal positions on the support element.

11. The targeting apparatus as claimed in claim 1 in which at least two drill guides are provided.

12. The targeting apparatus as claimed in claim 1 wherein the support element is in the form of an L-shaped frame, one arm of which carries the drill guide and the other arm providing the proximal location element.

13. The targeting apparatus as claimed in claim 12 wherein the conversation means includes means for securing the support element to a resectioned femur.

14. The targeting apparatus as claimed in claim 1 further comprising conversion means for converting it for use in performing transfemoral osteotomy surgery.

15. The targeting apparatus as claimed in claim 14 further comprising alternative means for securing the support element to the prosthesis to be implanted and which is adapted to replace the shaped proximal location element.

16. The targeting apparatus as claimed in claim 15 wherein the said alternative means comprise substantially straight proximal arm adapted for connection to the support element.

17. The targeting apparatus as claimed in claim 10 further comprising means to indicate the angular position of the drill guide relative to the resectioned femur.

18. The targeting apparatus as claimed in claim 14 further comprising means to vary the proximal-distal position of the support element in relation to the prosthesis securing means.

19. The targeting apparatus as claimed in claim 14 wherein the means for securing the support element to the resectioned femur is in the form of an adjustable open jawed

clamp adapted to partially surround the femur with which it is to be used.

20. The targeting apparatus as claimed in claim 14 further comprising guide means for locating the resected proximal end of the femur.

21. The targeting apparatus as claimed in claim 20 wherein said guide means are carried on the femur securing means.

22. The targeting apparatus as claimed in claim 13 wherein the securing means are connected to the L-shaped frame by an adjustable bracket which can be adjusted in proximal-distal directions on the frame and in relation to which the femur securing means can be angularly adjusted about a proximal-distal axis.

23. The targeting apparatus as claimed in claim 22 in which said adjustable bracket is readily removeable from the L-shaped frame.

24. The targeting apparatus as claimed in claim 14 wherein the femur securing means includes means for adjusting and clamping the securing means according to the femur diameter.

25. The targeting apparatus as claimed in claim 14 wherein the means for securing the support element to the resected femur includes a universal joint.

26. The targeting apparatus as claimed in claim 13 further comprising a drill guide for drilling openings through the bone and soft tissue when it has been folded back into position at the proximal end of the femur.

27. The targeting apparatus as claimed in claim 13 further comprising a drill guide element which has a line of drill openings each of which is adapted to guide a drill and means for rigidly securing said drill guide element to a femur to be resected with the line of openings extending in a proximal/distal direction.

28. The targeting apparatus as claimed in claim 27 further comprising means for altering the angular position of the drill guide element on the femur about a proximal/distal axis after it has been secured thereto.

29. The targeting apparatus as claimed in claim 27 wherein the drill guide element includes two parallel lines of drill openings.

30. The targeting apparatus as claimed in claim 27 wherein adjacent drill openings are angled in relation to each other so that the openings are more closely spaced apart on the outer side of the element than on the inner side adjacent the femur.

31. The targeting apparatus as claimed in claim 30 wherein each of the entry points of the openings on the outer side of the element serves two or more openings so that there are more entry points for openings on the inner side of the element than on the outer side.

32. The targeting apparatus as claimed in claim 27 wherein the drill guide element also includes means for guiding means for exposing the femur along a proximal/distal line.

33. The targeting apparatus as claimed in claim 32 wherein the guiding means is in the form of a guide slot.

34. The targeting apparatus as claimed in claim 27 wherein the drill guide element is removably connected to the securing means.

35. The targeting apparatus as claimed in claim 27 wherein the means for securing the element to the femur is said adjustable open jawed clamp adapted to partially surround the femur with which it is to be used.

36. The targeting apparatus as claimed in claim 27 further comprising means for locating the securing means on a partially resectioned transverse end of the femur after the first transverse cut has been made.

37. A kit of parts to provide targeting apparatus for use in performing endofemoral and/or transfemoral osteotomy surgery comprising:

a support element provided with a drill guide, means for securing the support element to a prosthesis to be implanted when performing transfemoral surgery, means for adjusting the angular position of the drill guide in relation to the resected femur about a proximal/distal axis, and means for securing the support element to a femur.

38. The kit of parts as claimed in claim 37 further comprising a drill guide element which has a line of drill guide openings each of which is adapted to guide a drill and means for securing said drill guide element to the said means for securing the support element to a femur.

39. The kit of parts as claimed in claim 37 further comprising a drill guide for drilling openings through the bone and soft tissue when it has been folded back into position at the proximal end of the femur when conducting transfemoral surgery.

40. A targeting apparatus for use in implanting a prosthetic femoral component having through holes for receiving screws extending transverse to a longitudinal axis of the femur, comprising:

a first arm extending generally parallel to the longitudinal axis of the femur, said first arm having at least one drill guide thereon; and

a second arm supported by said first arm, said second arm coupled to a proximal portion of said femoral component and shaped to extend around the greater trochanter and muscles of the hip joint.

41. The targeting apparatus as set forth in claim 40 wherein the first arm is adjustable in length.

42. The targeting apparatus as set forth in claim 40 further comprising a clamp support by said first arm for clamping on the femur.

43. The targeting apparatus as set forth in claim 42 wherein said clamp is supported on said first arm in a manner permitting adjustment along the longitudinal extend thereof.

44. The targeting apparatus as set forth in claim 43 wherein said clamp is slidably mounted on a longitudinal extending guide track formed on said first arm.

45. The targeting apparatus as set forth in claim 40 wherein said second arm is curved.

46. The targeting apparatus as set forth in claim 45 wherein said second arm is S-shaped.

47. The targeting apparatus as set forth in claim 40 wherein said second arm is coupled to a proximal end of the femur by a connector threadably engaging a threaded bore in the proximal end surface of the femoral component.